Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	ET Docket No. 02-98
	)	
Amendment of Parts 2 and 97 of the Commission's Rules to Create a Low Frequency allocation for the Amateur Radio Service	)	RM-9404
	)	
Amendment of Parts 2 and 97 of the Commission's Rules Regarding an Allocation of a Band near 5 MHz for the Amateur Radio Service	)	RM-10209
	)	
Amendment of Parts 2 and 97 of the Commission's Rules Concerning the Use of the 2400-2402 MHz Band by the Amateur and Amateur-Satellite Services	)	RM-9949

DONALD B. CHESTER
REPLY TO COMMENTS

In reply to comments by:

William J. Cook
Shoukat Khan
Dan Glaser for Entergy Services
Michael J. McDonald
CQ Communications Inc.
Central Iowa Power Cooperative
IEEE/Power System Relaying Committee
Exelon Corporation
Jeffrey H. Katz, PSEG Services Corporation
Lincoln Electric System
Shelley R. Sahling-Zart, Lincoln Electric System
ONCOR Electric Energy Delivery Company
New York Independent Systems Opeator, Inc.
Pinnacle West Capital Corporation
United Telecom Council
Power Line Communucations Assocation
HomePlug Powerline Alliance
IEEE 802 Local and Metropolitan Area Network Standards Committee

Commenters representing the electric power industry have expressed unanimous opposition to any form of Low-Frequency amateur allocation, on the grounds that it could interfere with Power Line Carrier systems. They assert that interference could result in malfunctions on the nationwide power grid and possible power outages.

Technology that is less vulnerable to low-frequency rf interference and which could replace PLC systems, already exists and is in use by many U.S. power distributors. The only argument the power industry has made against phasing out the remaining PLC systems is the cost of conversion. Given the use of electric power in nearly every household and business establishment in North America, and the quantity of electric energy consumed nationally, the cost of conversion would be at most a miniscule percentage of the gross income of major electric power distributors.

Of far greater concern than costs incurred by the electric power industry is the threat to national security posed by the possibility of widespread power outages. If the power grid would be vulnerable to inadvertent shutdown due to random interference to PLC systems from relatively low power amateur transmitters, it would be even more vulnerable to disruption by malevolent forces who might set up low-frequency transmitters to deliberately jam PLC systems. Electric power facilities are clearly on terrorists' lists of targets, as indicated by these excerpts from a recent newspaper article from Florida:

" (AP) 24 June 2002

" Two young Pakistani immigrants from Hollywood, FL allegedly hatched a plan to attack South Florida power plants.

" Pakistani immigrants Imran Mandhai, 19, and Shueyb Mossa Jokhan, 24 of Hollywood were accused this spring of conspiring to bomb electrical transformers in Miami.

" Safraz Jehaludi, a 21-year old computer technician from Miramar, FL is being held on charges he sent the FBI anonymous e-mail messages threatening to blow up the White House and a Florida power plant."

If the power grid is as vulnerable to disruption by interference from nearby low-frequency transmitters as the industry asserts, it is imperative that PLC systems be immediately upgraded to make them immune to interference from outside signal sources, or else phased out altogether and replaced with more secure technology. If the threat is not serious enough to demand modification or replacement of PLC technology, then it is likewise not serious enough to

justify withholding HF spectrum at 135.7-137.8 kHz and 160-190 kHz from the amateur radio service.

According to some experts, interference to PLC systems is a bogus issue. For example, a power company substation relay and control technician who claims 30 years experience with PLC, responded with the following statement:

" This is a crock. Interference to PLC, even if deliberate, would NOT result in widespread power outages. The above "concern" from whoever shows a lack of understanding of the operation of PLC.

" The 1 or 10 watt PLC transmitters typically only lose 10-20db or less (depending on line length and additional untrapped taps on the line) from one end of the line to the other. The receivers are highly selective, typically with bandwidths of 200Hz or less, and sensitivity margin is generally set 15db below the normal received signal. For hams, these signal levels would be very strong, like what might exist in the near field of the transmitting antenna. It is very doubtful someone would set up a station this close to a power transmission line! Typical PLC systems, as opposed to transfer trip or Permissive Overreach Transfer Trip (POTT), only transmits during a fault condition on the line. PLC does not trip and clear transmission lines, but rather signals the opposite end of the line during a fault condition, to BLOCK high speed tripping of circuit breakers outside the ends of the line under fault. If the PLC channel fails to receive the BLOCK signal for whatever reason, the worst that happens is that a circuit breaker outside the faulted section operates at the same time as the breakers each side of the fault. If the PLC channel were being jammed, the relays would still operate, but in a time delay mode rather than instantaneously. No big deal, because most all transmission lines are bidirectional, and high speed automatic reclosing (typically 30 cycles or less) takes place, and all is back to normal if the fault is momentary.

Regarding whether or not the power grid would be vulnerable to inadvertent shutdown caused by interference from relatively low power nearby amateur transmitters or to disruption by deliberate attempts to jam PLC, " It is not, and deliberate jamming would be a waste of time by an ignorant terrorist or ham. I believe (the FCC and the power industry are using a bogus argument against a Low Frequency amateur band), possibly based on erroneous information provided by someone…"

Contact information for the above correspondent is available to the Commission upon request by e-mail or to my mailing address.

Unlicensed Part 15 devices including power line carrier systems, by definition, are permitted to operate with the prior understanding that they are entitled to no government protection whatever from licensed users of the radio spectrum. It might be more accurate to say that the operation of Part 15 devices is *tolerated* under government rules. The industry was aware of this pre-condition from the outset, before they developed the PLC systems and unlicensed consumer devices that are in use today. Requests by Part 15 interests for consideration in the current proceeding demonstrate a classic " give an inch, take a mile" attitude that would set a dangerous precedent by redefining the status of Part 15 devices to give unlicensed users veto power over frequency allocations in the radio spectrum. This was never intended when Part 15 rules were formulated and adopted by the Commission.

Comments by Part 15 interests have expressed opposition to ALL THREE of the proposed new amateur allocations, at 2400-2402 mHz, 5.25-5.4 mHz and 135.7-137.8 kHz. I concur with comments by **CQ Communications Inc.** I am deeply troubled by the proliferation of unlicensed Part 15 devices and the recent spate of efforts by various corporate interests for Part 15 protection. I am likewise troubled by the Commission's implication in this Notice that unlicensed users may have any priority at all over licensed users of any part of the radio spectrum.

In addition to opposing any form of low-frequency amateur allocation, the **Power Line Communications Association** has expressed hostility to the 5.25-5.4 mHz proposal. An emerging industry represented by the Association is attempting to establish home delivery of high speed data over electric power lines. Measures have reportedly been taken to notch out the present amateur bands, but the Association is opposed to blocking any additional frequencies. The Association presumptuously requests that the Commission place a freeze on reallocation of any frequencies between 1.7 and 30 mHz until studies of the impact of HF radio communications on this technology can be completed**. HomePlug Powerline Alliance**, while expressing less hostility to the 5 mHz allocation, is concerned about existing systems that already use 5 mHz spectrum and requests a 10-year waiver of the Part 15 requirement to cease operation if interference to amateur operation on the new band is alleged. Furthermore, although not directly related to the amateur radio proposals in Docket 02-98, I am concerned that this technology could severely hamper international shortwave broadcast reception.

IEEE 802 Local and Metropolitan Area Network Standards Committee is concerned about amateur interference to Part 15 devices operating in the 2400-2402 mHz band. Based on the "the many millions of users of unlicensed Part 15 devices operating above 902 MHz" compared to the number of amateur users of this spectrum, the Commission is being asked to extend a "safe harbor" provision to all Part 15 operations in all bands above 902 MHz " that are shared between Part 15, the Amateur Radio Service, and/or the Amateur Satellite Service." It should be pointed out that there is no " sharing" of frequencies between any licensed radio service and any Part 15 device, since the latter enjoy no allocation status whatever.

Conclusion: If a low-frequency amateur allocation would pose a threat to the integrity of the national power grid, then the system is so vulnerable to forms of interference beyond the Commission's control, that PLC systems must be immediately upgraded or else phased out and replaced with more secure technology. Corrective action taken by the electric power industry would make objections to low frequency amateur allocations a moot issue. Any lesser threat simply would not justify denial of amateur radio allocations on 135.7-137.8 kHz and 160-190 kHz in the first place. The industry would have ample time, during the inevitable delay between public notice and the effective date of the reallocation, to replace or make adjustments to PLC systems as deemed necessary. Furthermore, the operation of unlicensed radio-frequency devices should have no bearing whatever on the decision whether or not to grant the proposed changes in frequency allocations on 5.25-5.4 mHz and 2400-2402 mHz.

Respectfully submitted,

Donald B. Chester, K4KYV